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November 19, 1998

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RECEIVED
NOV 19 1998
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, DC 20554

Re: Ex Parte Submission
MM Docket No. 87-268

Dear Ms. Salas:

On behalf of Fox Broadcasting Company, pursuant to Section 1.1206(b) of the Commission's rules, we enclose an original and one copy of materials for inclusion in the referenced docket. If there are any questions regarding this submission, please contact the undersigned.

Respectfully submitted,

HOGAN & HARTSON L.L.P.

By: Jacqueline P. Cleary

Attorneys for Fox Broadcasting Company

Enclosure

cc: Robert Eckert (w/enclosure)

No. of Copies rec'd 0+1
List ABCDE

News Technology Group
A News Corporation Company
10201 West Pico Boulevard, 100/2000, Los Angeles, CA 90035
Tel: (310) 369-4482 Fax: (310) 369-8677

TO: DTV Interference File

FROM: Evans Wetmore
Andy Setos

DATE: November 6, 1998

RE: Effects of DTV Over-Tilting on NTSC Taboo Reception

Summary

Concerns have been raised regarding "DTV Maximization by Over-Tilting". Specifically that the over-tilting technique will cause heretofor unexpected interference to analog UHF stations close to an "over-tilted" DTV station.

The concerns focus on two issues:

that there is no empirical data to predict how much interference might occur close to an analog transmitter which is proximate to an over-tilted DTV station, and

that the high DTV signal levels occurring near an "over-tilted" DTV transmitter must be calculated to predict any detrimental effect to the analog signal.

On the first matter, our analysis shows that the reception conditions presumed by others simply don't occur in the real world. Therefore, no new laboratory investigations are needed.

The second matter is that the power levels close to an "over-tilted" antenna should be modeled in three dimensions to ensure no interference occurs to an existing analog broadcast signal. Such modeling is necessary to design a DTV "over-tilted" facility which respects existing analog stations.

Background

Persons living in the regions where high DTV levels caused by over-tilting occur are within 10 to 15 km of the DTV transmitter.

Persons living within 15 km of an antenna farm will not be using outdoor reception. They will be using indoor antennas such as loops or rabbit ears. The assumption of outdoor antennas is wholly unjustified as a practical matter for close-in reception.

The assumption of outdoor reception yields signal levels which are excessive and can cause overload and interference problems. In the very unlikely event a consumer were to use an outdoor antenna close to the transmitter site, the installation of a simple pad, which is readily available, would easily and inexpensively dispatch any problems.

Persons using indoor antennas within about 15 km of the transmitter will typically get signal levels as follows:

NTSC	-30 to -40 dBm
DTV(Not Over-Tilted)	-40 to -50 dBm
DTV (Over-Tilted)	-35 to -40 dBm

The FCC assumed the so-called "weak" level in setting up its table of allotments. The weak level will normally be found for NTSC indoor reception at 15+ km from the transmitter.

Where over-tilting is proposed, a standard maximization engineering showing should be provided with a full interference analysis which uses the actual elevation patterns of the desired and undesired transmitters.

Also the analysis of an application should vary the acceptable D/U ratio as a function of D in some manner. One method is to actually create a table of D/U's as a function of D. The difficulty here would be that the program would at some point have to change from assuming an outdoor antenna 10 m AGL with substantial gain to an indoor one 3 m AGL with no gain and subject to ground clutter losses. Alternately the D/U ratio could change from the "weak" values to the "moderate" values within 15 km of the transmitter. This latter approach would be simpler to implement and should provide reasonable results.

We also note that the ATTC/Grand Alliance test data includes taboo data for DTV into NTSC at the "moderate" level so that no new time-consuming testing would be needed. The data is already at hand.

As a general comment we believe that over-tilting should be treated like any other maximization in that a full engineering showing should be required. Also we feel that the use of the "moderate" level and indoor antennas is realistic where close-in analysis must be done.

Over-tilting should be defined taking into account the radio horizon, not an arbitrary elevation angle. We suggest that over-tilting will exist when the main lobe of the antenna is greater than 1.25° below the elevation angle to the radio horizon.

News Technology Group

A News Corporation Company

10201 West Pico Boulevard, 12/222, Los Angeles, CA 90035
Tel: (310) 369-1008 Fax: (310) 369-8677

TO: Evans Wetmore

FROM: Joe Gubler

DATE: October 28, 1998

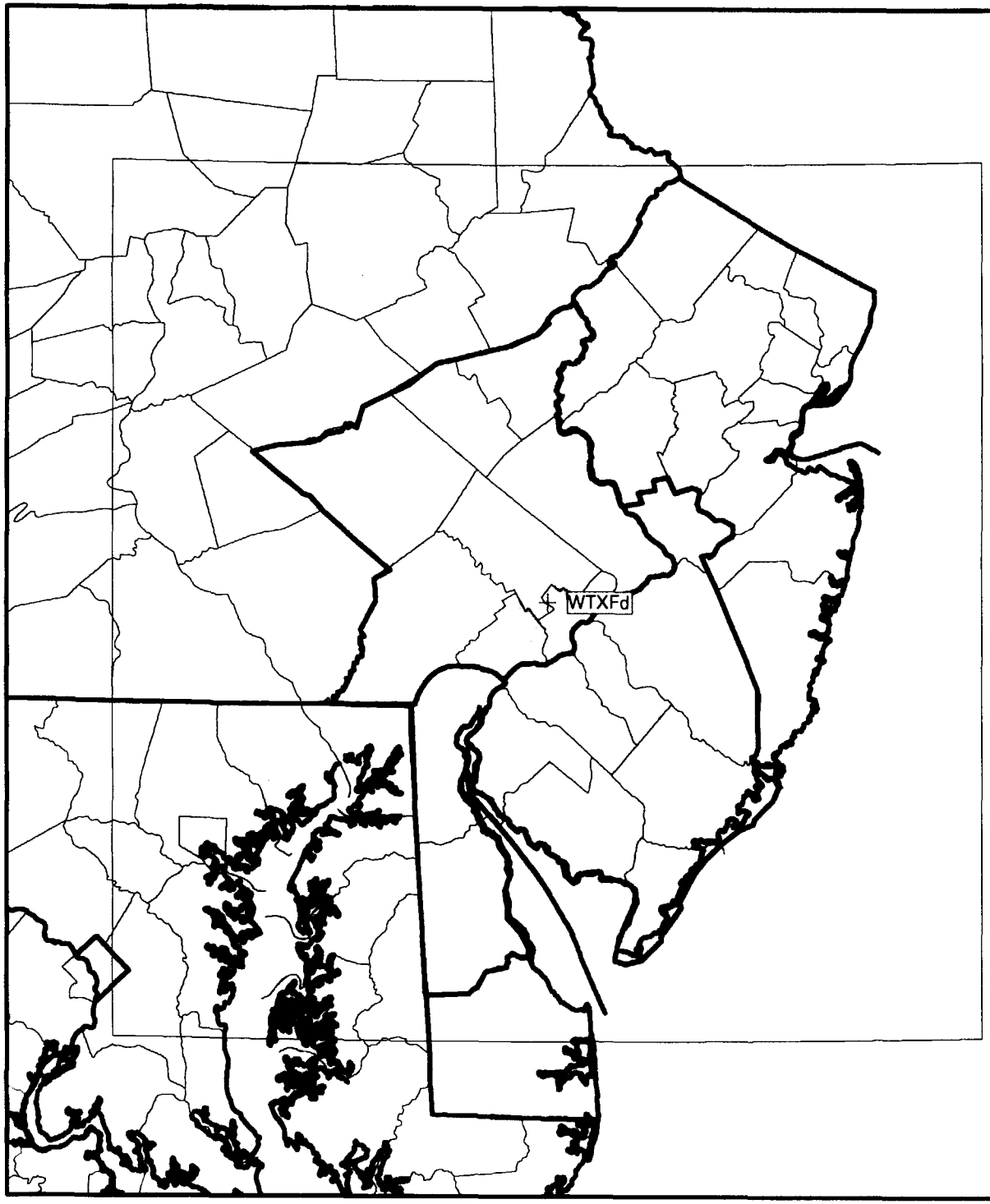
RE: Overtilting Analysis

We have studied the effects of overtilting with a 1000 kW ERP in Baltimore, MD and Philadelphia, PA. In both markets, we selected a 27-gain elevation pattern and tilted it enough to satisfy the FCC requirement that the ERP at the radio horizon not exceed the allotted value at any azimuth. Our objective in this was to determine what sorts of Rx power levels would be experienced by receivers located close to the transmitting facility. We considered receive power levels for both indoor and outdoor reception.

WTXF-DT in Philadelphia was allotted an ERP of 273.3 kW. Moving to an ERP of 1000 kW with a 27-gain elevation pattern requires WTXF-DT to use an electrical tilt of 1.75 degrees. The results of the indoor reception study are shown in Figure 1. The figure shows that the highest Rx power level encountered in this configuration is about –40 dBmW. Figure 2 shows the results of an outdoor reception study. As expected, the Rx power levels are significantly higher, exceeding –10 dBmW for locations near the WTXF tower.

WBFF-DT in Baltimore was allotted an ERP of 50 kW. Moving to an ERP of 1000 kW with a 27-gain elevation pattern requires WBFF-DT to use an electrical tilt of 2.5 degrees. The results of an indoor reception study are shown in Figure 3. It can be seen that the highest Rx power levels encountered are in the neighborhood of –40 dBmW. An outdoor reception study is shown in Figure 4. In this case, Rx power levels exceed –10 dBmW for locations near the WBFF tower.

Although the outdoor reception studies presented here demonstrate that very high Rx power levels can be brought about by the use of overtilting, it should be noted that outdoor reception is unlikely to be the viewing scenario for households in such close proximity to the transmitter. Also note that the outdoor reception studies presented here not only employ elevated antennas with gain, but also use FCC planning factors instead of Fox planning factors. This tends to produce much higher Rx power levels than would be encountered if we simply assumed an outdoor aerial but continued to use Fox planning factors. The latter configuration produces Rx power levels no greater than –32.5 dBmW for both WTXF-DT and WBFF-DT.



EDX SignalPro™: WTXFd.map

Prop. model: Free Space + RMD
Time: 99.0% Loc.: 50.0%
Prediction Confidence Margin: 10.0dB
Climate: Continental Temperate
Groundcover: USGS-EDX
Atmospheric Abs.: none
K Factor: 1.475
RX Antenna - Type: OMNI
Height: 3.0 m AGL Gain: 0.00 dBd

Received power at remote

> -40.0 dBmW
< -40.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WTXFd	407.0	60.00	DA-H	N40°02'26.00"
group: 1	641.0000 MHz	0.0		W75°14'20.00"

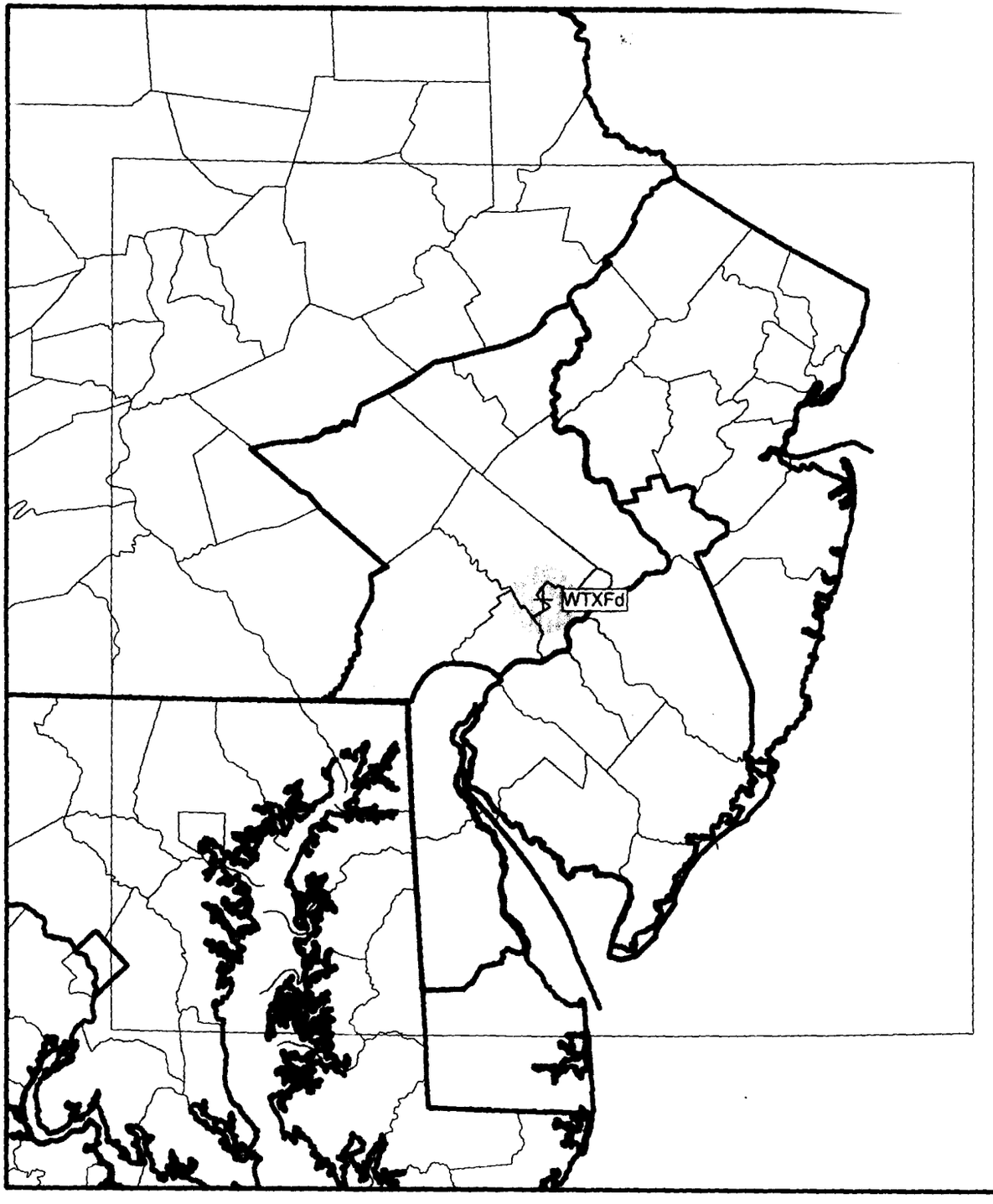
KILOMETERS

-25 0 75

WTXF-DT with Overtilting

Indoor Reception

Figure 1 8/27/98



EDX Signalfo[illegible]

Prop. model: Longley-Rice v1.2.2
Time: 90.0% Loc.: 50.0%
Prediction Confidence Margin: 0.0dB
Climate: Continental Temperate
Groundcover: None
Atmospheric Abs.: none
K Factor: 1.333
RX Antenna - Type: DA
Height: 9.0 m AGL Gain: 6.00 dBd

Received power at remote

> -10.0 dBmW
-20.0 to -10.0 dBmW
< -20.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WTXFd	407.0	60.00	DA-H	N40°02'26.00"
group: 1	641.0000 MHz	0.0		W75°14'20.00"

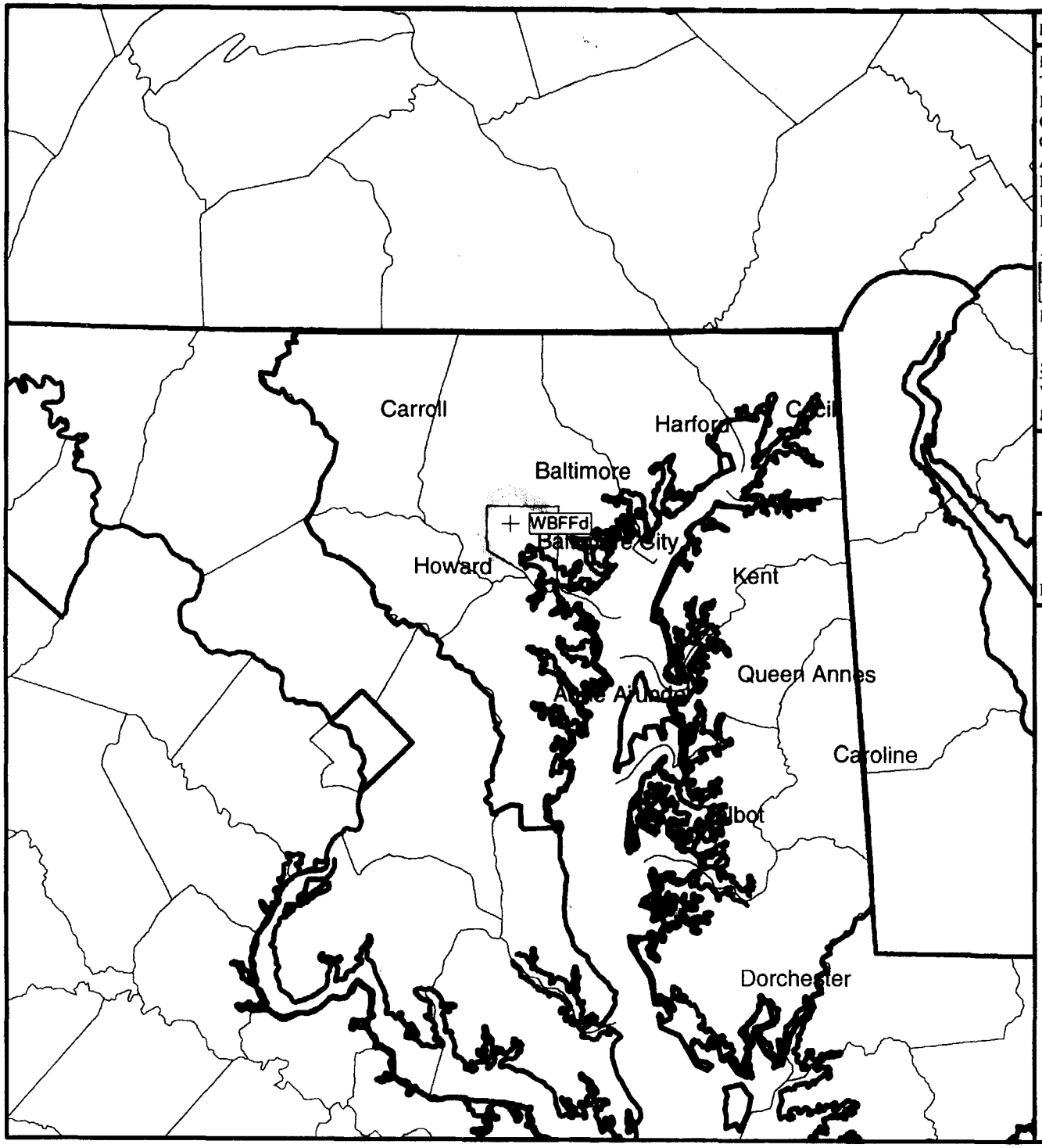
KILOMETERS

-25 0 75

WTXF-DT with Overtilting

Outdoor Reception (FCC)

Figure 2 8/27/98



EDX SignalPro™: WBFFd.map

Prop. model: Free Space + RMD
Time: 99.0% Loc.: 50.0%
Prediction Confidence Margin: 10.0dB
Climate: Continental Temperate
Groundcover: USGS-EDX
Atmospheric Abs.: none
K Factor: 1.540
RX Antenna - Type: OMNI
Height: 3.0 m AGL Gain: 0.00 dBd

Received power at remote

> -40.0 dBmW
< -40.0 dBmW

Min. receiver threshold level: -77.0 dBmW

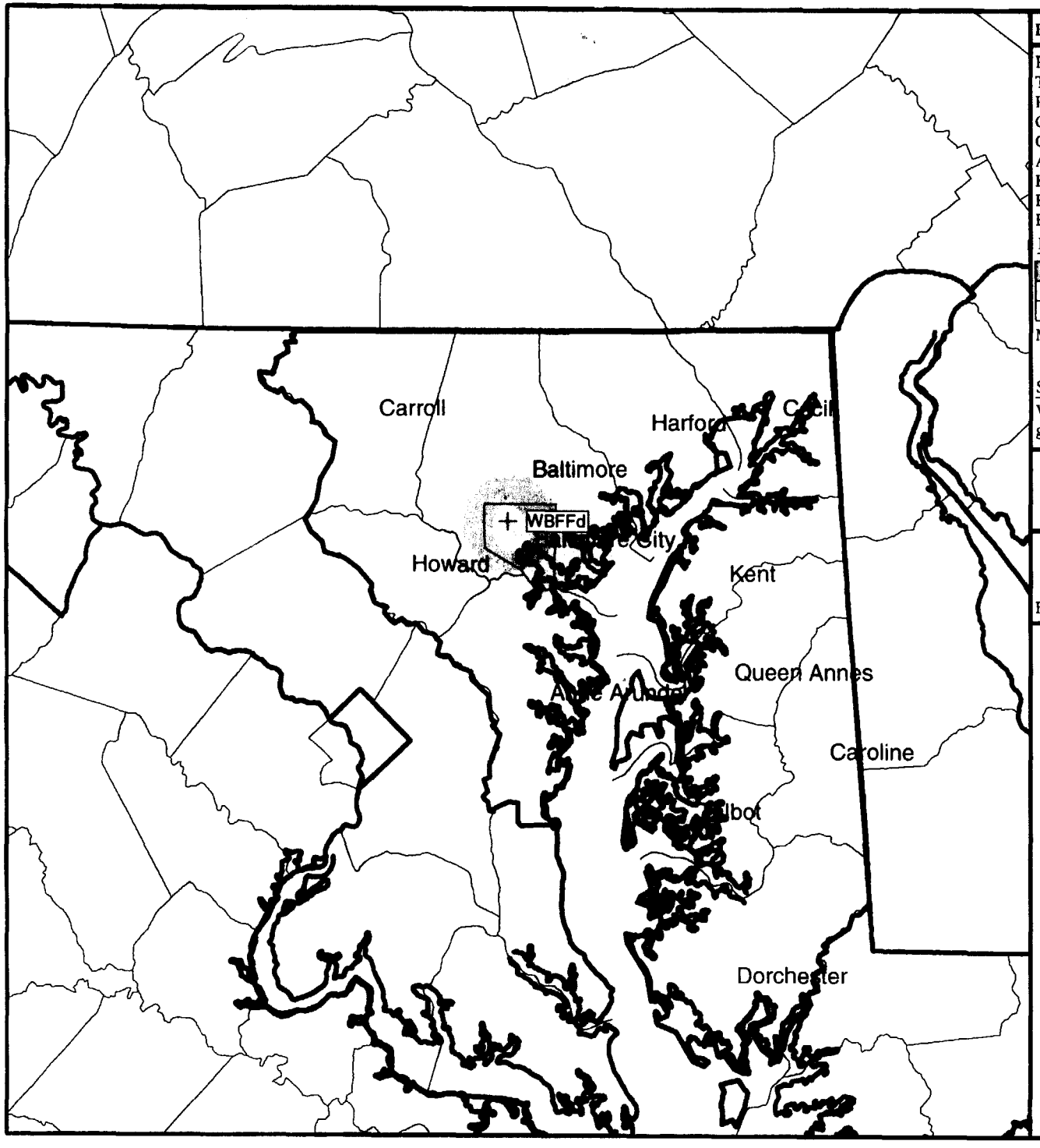
Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WBFFd	496.0	60.00	DA-H	N39°20'10.00"
group: 1	665.0000 MHz	0.0		W76°38'59.00"

KILOMETERS
-25 0 25

WBFF-DT with Overtilting

Indoor Reception

Figure 3 8/27/98



EDX SignalPro™: WBFFd.map

Prop. model: Longley-Rice v1.2.2
Time: 90.0% Loc.: 50.0%
Prediction Confidence Margin: 0.0dB
Climate: Continental Temperate
Groundcover: None
Atmospheric Abs.: none
K Factor: 1.333
RX Antenna - Type: DA
Height: 9.0 m AGL Gain: 6.00 dBd
Received power at remote

> -10.0 dBmW
-20.0 to -10.0 dBmW
< -20.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WBFFd	496.0	60.00	DA-H	N39°20'10.00"
group: 1	665.0000 MHz	0.0		W76°38'59.00"

KILOMETERS
-25 0 25

WBFF-DT with Overtilting
Outdoor Reception (FCC)
Figure 4 8/27/98

News Technology Group

A News Corporation Company

10201 West Pico Boulevard, 100/2000, Los Angeles, CA 90035
Tel: (310) 369-4482 Fax: (310) 369-8677

TO: DTV Interference File

FROM: Evans Wetmore
Andy Setos

DATE: November 6, 1998

RE: Effects of DTV Over-Tilting on NTSC Taboo Reception

Summary

Concerns have been raised regarding "DTV Maximization by Over-Tilting". Specifically that the over-tilting technique will cause heretofor unexpected interference to analog UHF stations close to an "over-tilted" DTV station.

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> that there is no empirical data to predict how much interference might occur close to an analog transmitter which is proximate to an over-tilted DTV station, and
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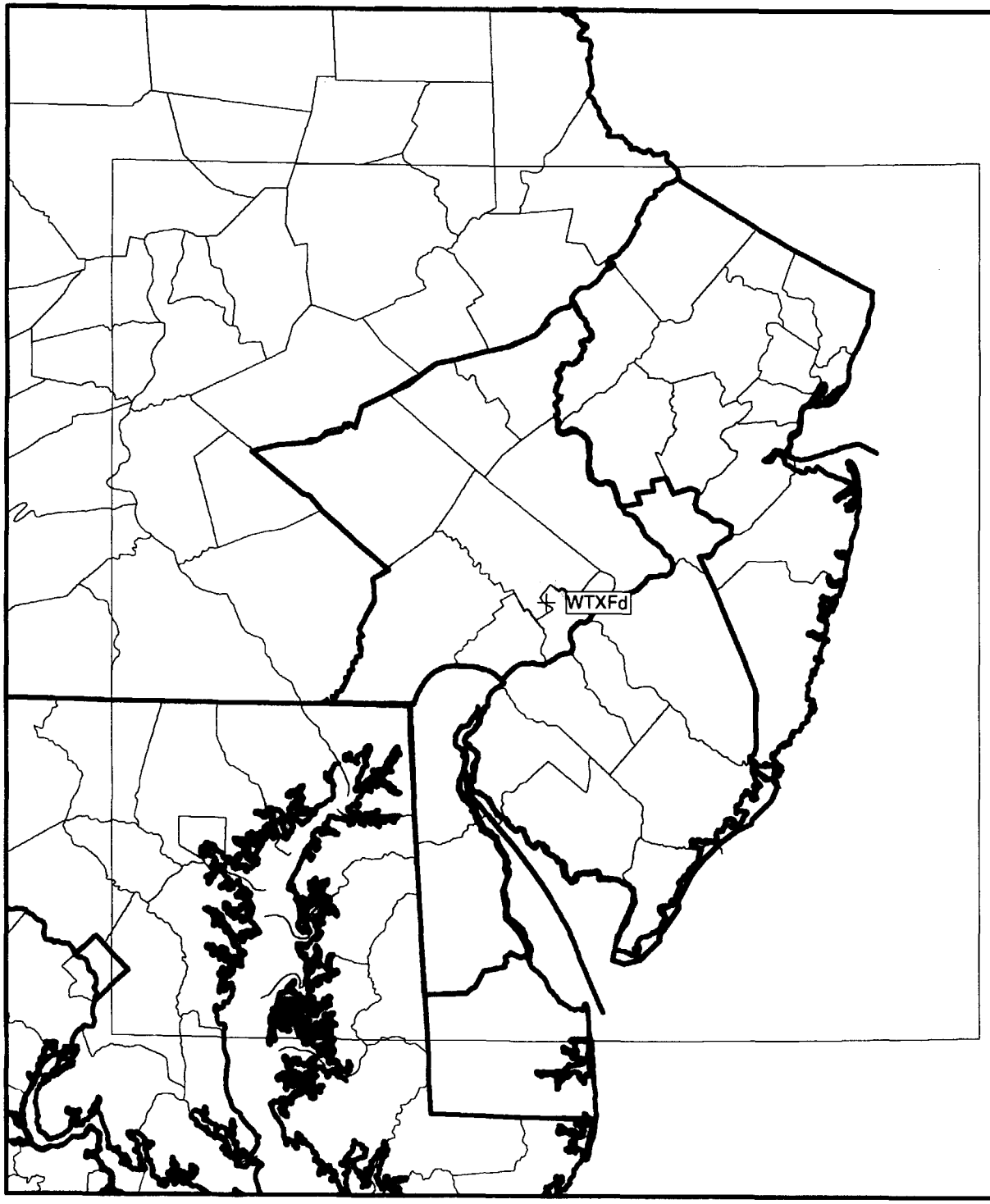


EDX SignalPro™: WTXFd.map

Prop. model: Free Space + RMD
Time: 99.0% Loc.: 50.0%
Prediction Confidence Margin: 10.0dB
Climate: Continental Temperate
Groundcover: USGS-EDX
Atmospheric Abs.: none
K Factor: 1.475
RX Antenna - Type: OMNI
Height: 3.0 m AGL Gain: 0.00 dBd

Received power at remote

> -40.0 dBmW
< -40.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WTXFd	407.0	60.00	DA-H	N40°02'26.00"
group: 1	641.0000 MHz	0.0		W75°14'20.00"

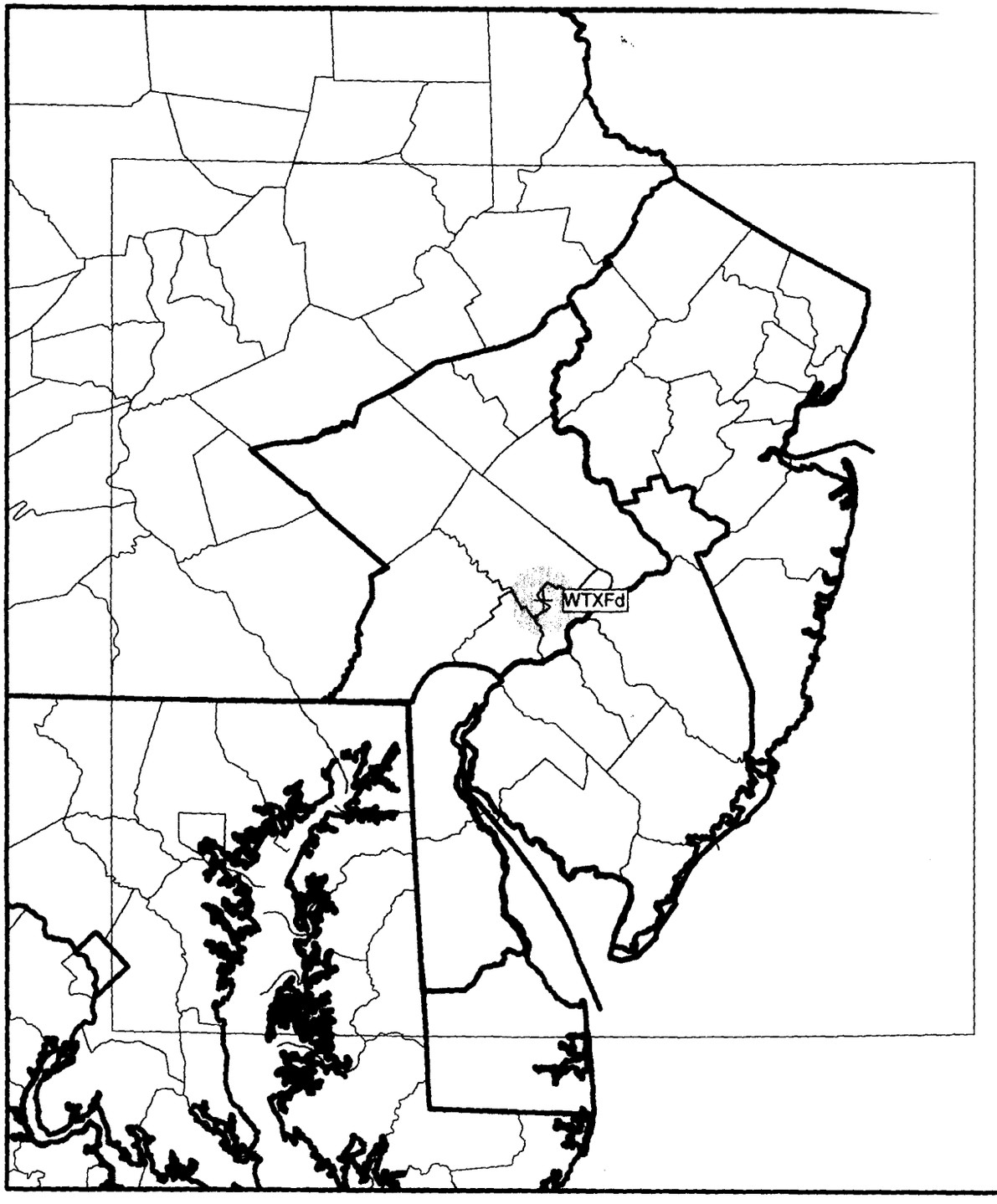
KILOMETERS

-25 0 75

WTXF-DT with Overtilting

Indoor Reception

Figure 1 8/27/98



EDX SignalPro™: WTXF-DT

Prop. model: Longley-Rice v1.2.2
Time: 90.0% Loc.: 50.0%
Prediction Confidence Margin: 0.0dB
Climate: Continental Temperate
Groundcover: None
Atmospheric Abs.: none
K Factor: 1.333
RX Antenna - Type: DA
Height: 9.0 m AGL Gain: 6.00 dBd

Received power at remote

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-20.0 to -10.0 dBmW
< -20.0 dBmW

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Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
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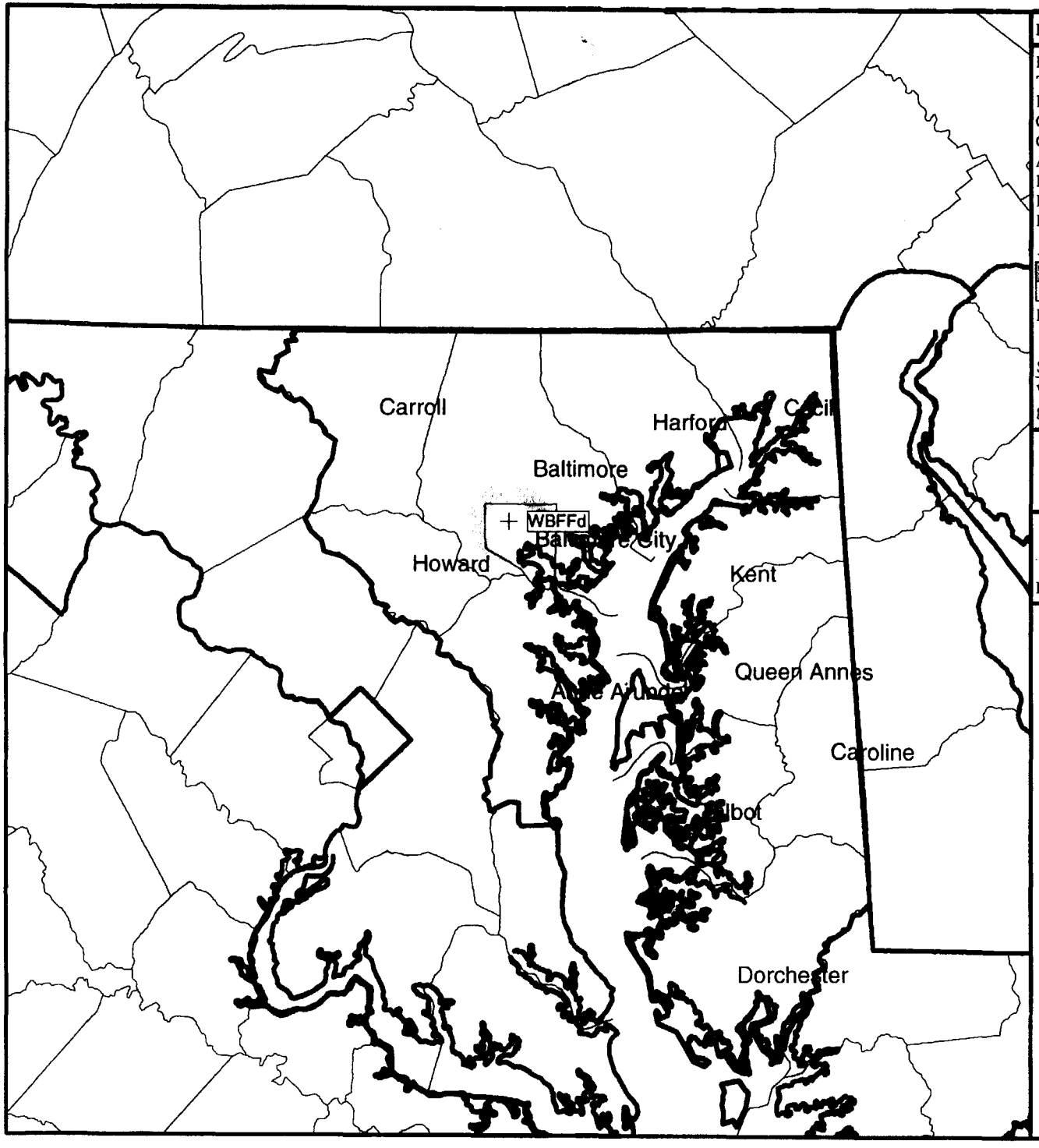
KILOMETERS

-25 0 75

WTXF-DT with Overtilting

Outdoor Reception (FCC)

Figure 2 8/27/98



EDX SignalPro™: WBFFd.map

Prop. model: Free Space + RMD
Time: 99.0% Loc.: 50.0%
Prediction Confidence Margin: 10.0dB
Climate: Continental Temperate
Groundcover: USGS-EDX
Atmospheric Abs.: none
K Factor: 1.540
RX Antenna - Type: OMNI
Height: 3.0 m AGL Gain: 0.00 dBd

Received power at remote

> -40.0 dBmW
< -40.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WBFFd	496.0	60.00	DA-H	N39°20'10.00"
group: 1	665.0000 MHz	0.0		W76°38'59.00"

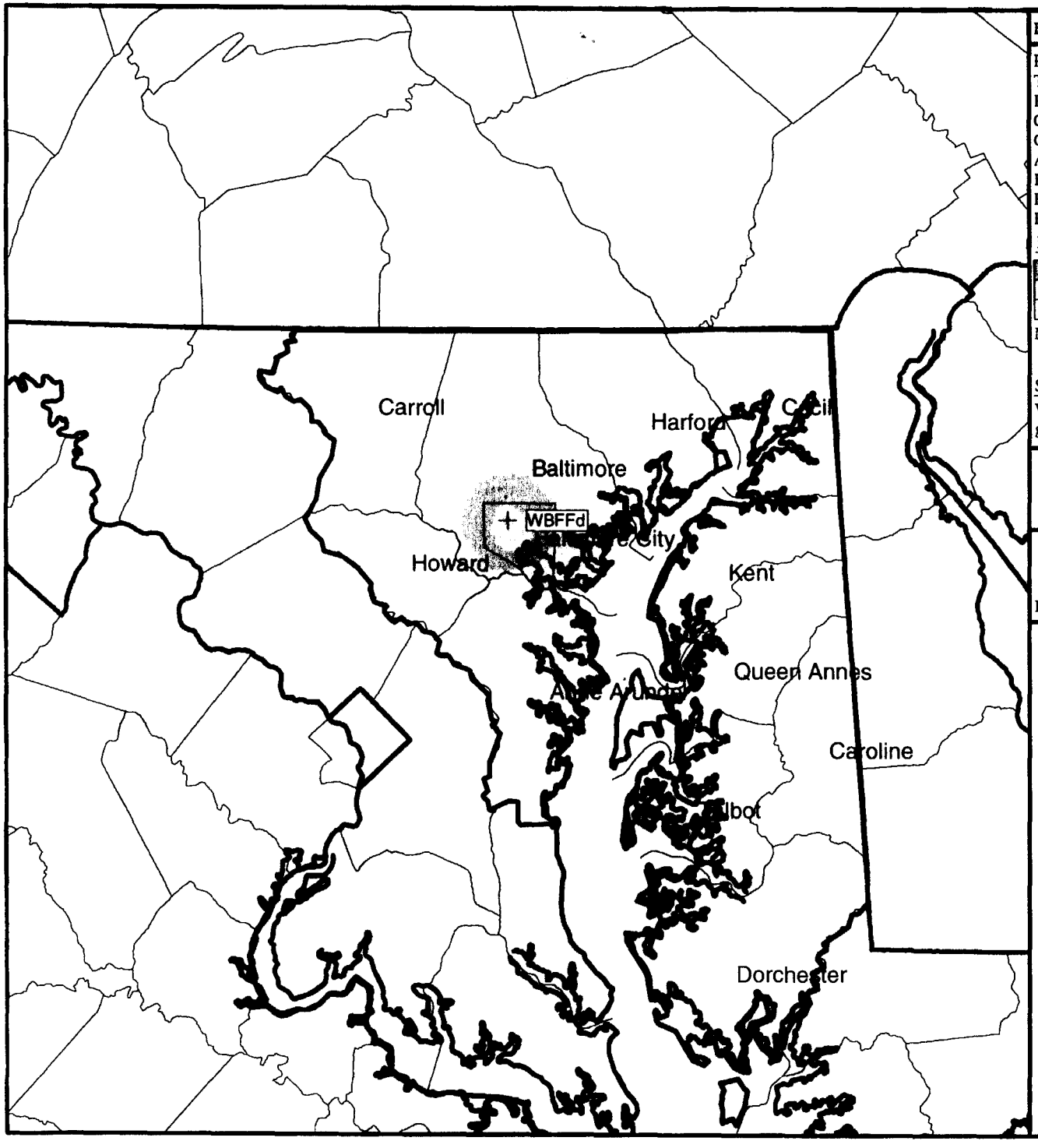
KILOMETERS

-25 0 25

WBFF-DT with Overtilting

Indoor Reception

Figure 3 8/27/98



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Time: 90.0% Loc.: 50.0%
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Climate: Continental Temperate
Groundcover: None
Atmospheric Abs.: none
K Factor: 1.333
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KILOMETERS
-25 0 25

WBFF-DT with Overtilting

Outdoor Reception (FCC)

Figure 4 8/27/98

News Technology Group

A News Corporation Company

10201 West Pico Boulevard, 100/2000, Los Angeles, CA 90035
Tel: (310) 369-4482 Fax: (310) 369-8677

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Andy Setos

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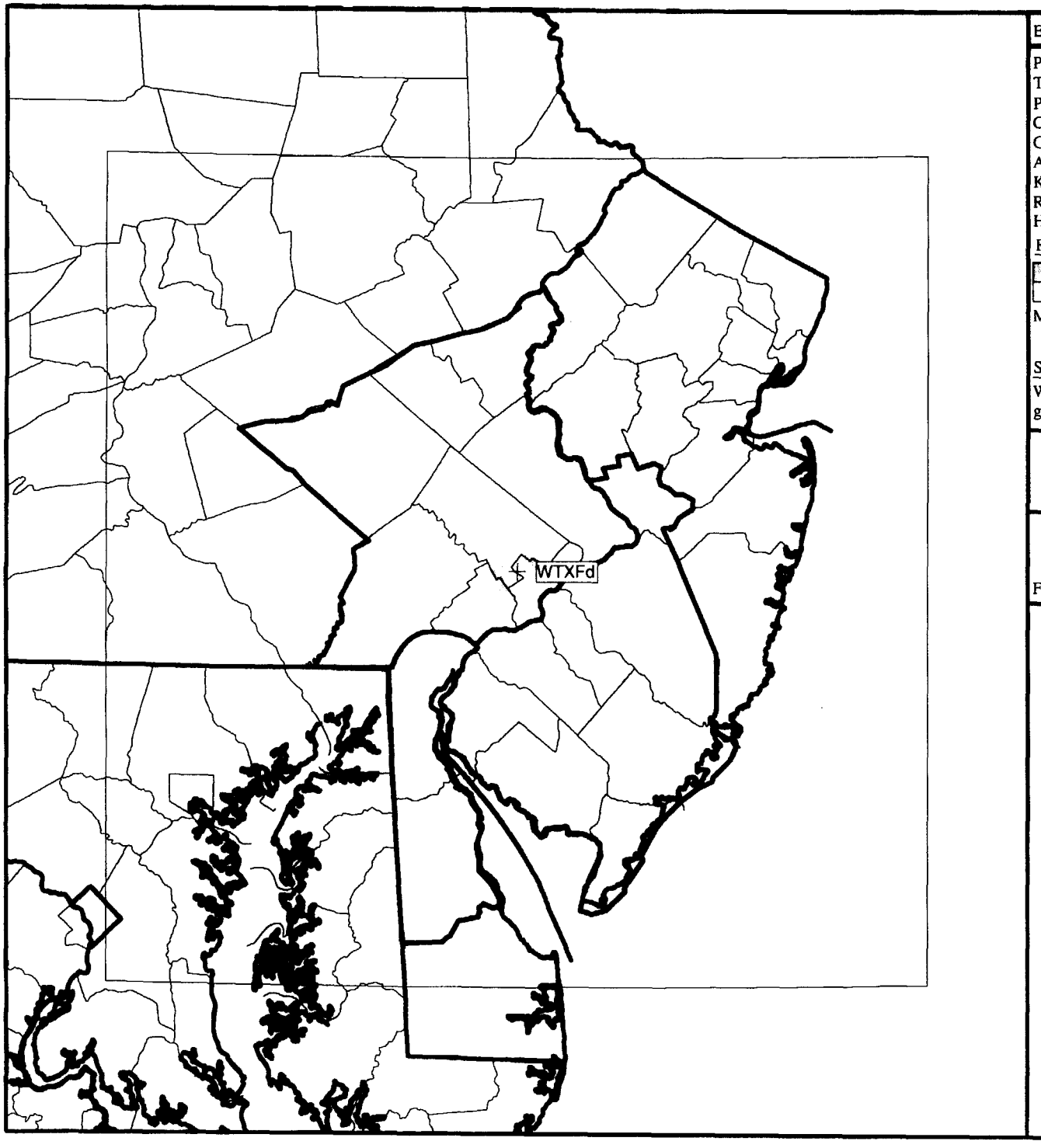


EDX SignalPro™: WTXFd.map

Prop. model: Free Space + RMD
Time: 99.0% Loc.: 50.0%
Prediction Confidence Margin: 10.0dB
Climate: Continental Temperate
Groundcover: USGS-EDX
Atmospheric Abs.: none
K Factor: 1.475
RX Antenna - Type: OMNI
Height: 3.0 m AGL Gain: 0.00 dBd

Received power at remote

> -40.0 dBmW
< -40.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WTXFd	407.0	60.00	DA-H	N40°02'26.00"
group: 1	641.0000 MHz	0.0		W75°14'20.00"

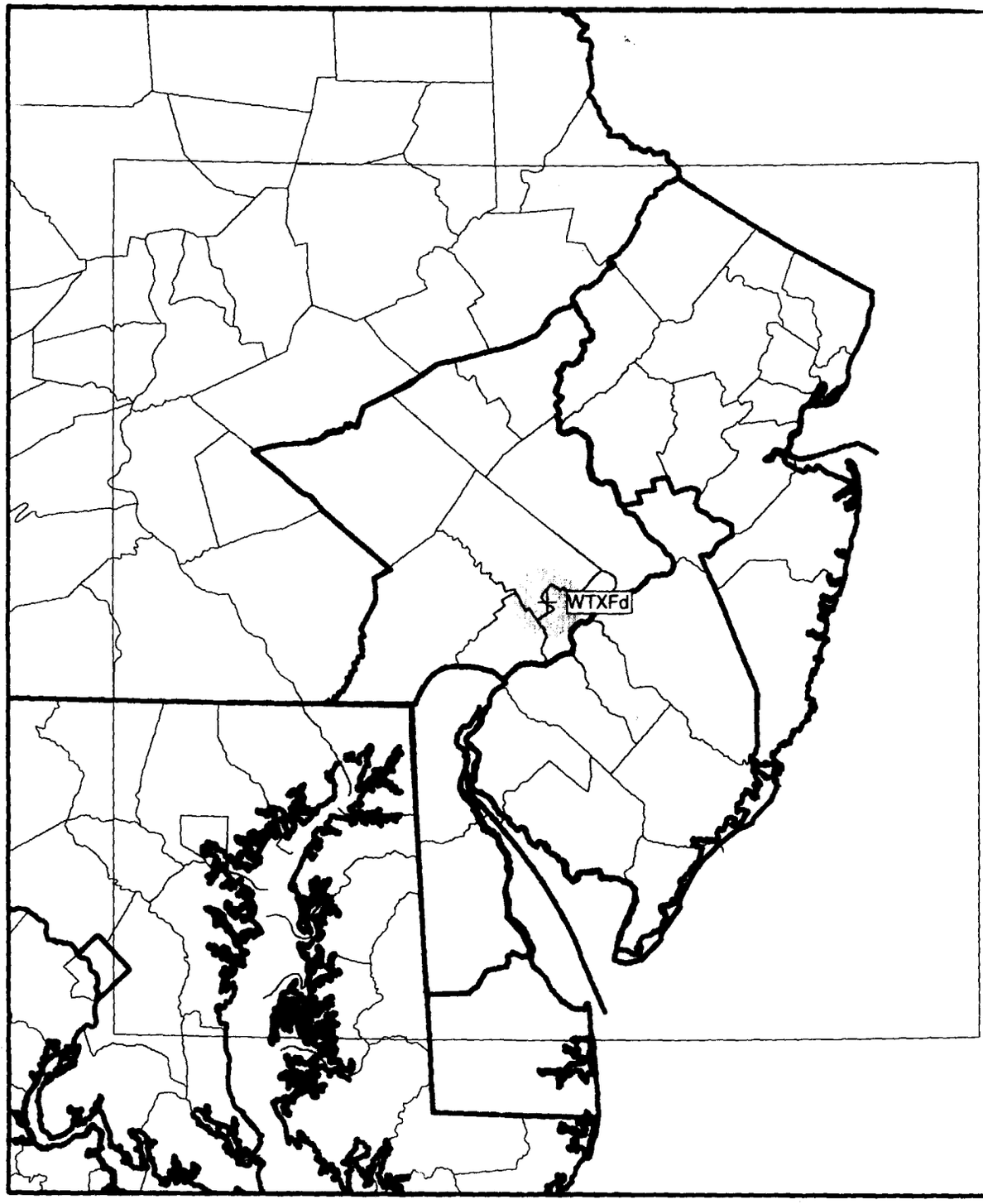
KILOMETERS

-25 0 75

WTXF-DT with Overtilting

Indoor Reception

Figure 1 8/27/98



EDX SignalPro™: WTXFd.map

Prop. model: Longley-Rice v1.2.2
Time: 90.0% Loc.: 50.0%
Prediction Confidence Margin: 0.0dB
Climate: Continental Temperate
Groundcover: None
Atmospheric Abs.: none
K Factor: 1.333
RX Antenna - Type: DA
Height: 9.0 m AGL Gain: 6.00 dBd

Received power at remote

> -10.0 dBmW
-20.0 to -10.0 dBmW
< -20.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WTXFd	407.0	60.00	DA-H	N40°02'26.00"
group: 1	641.0000 MHz	0.0		W75°14'20.00"

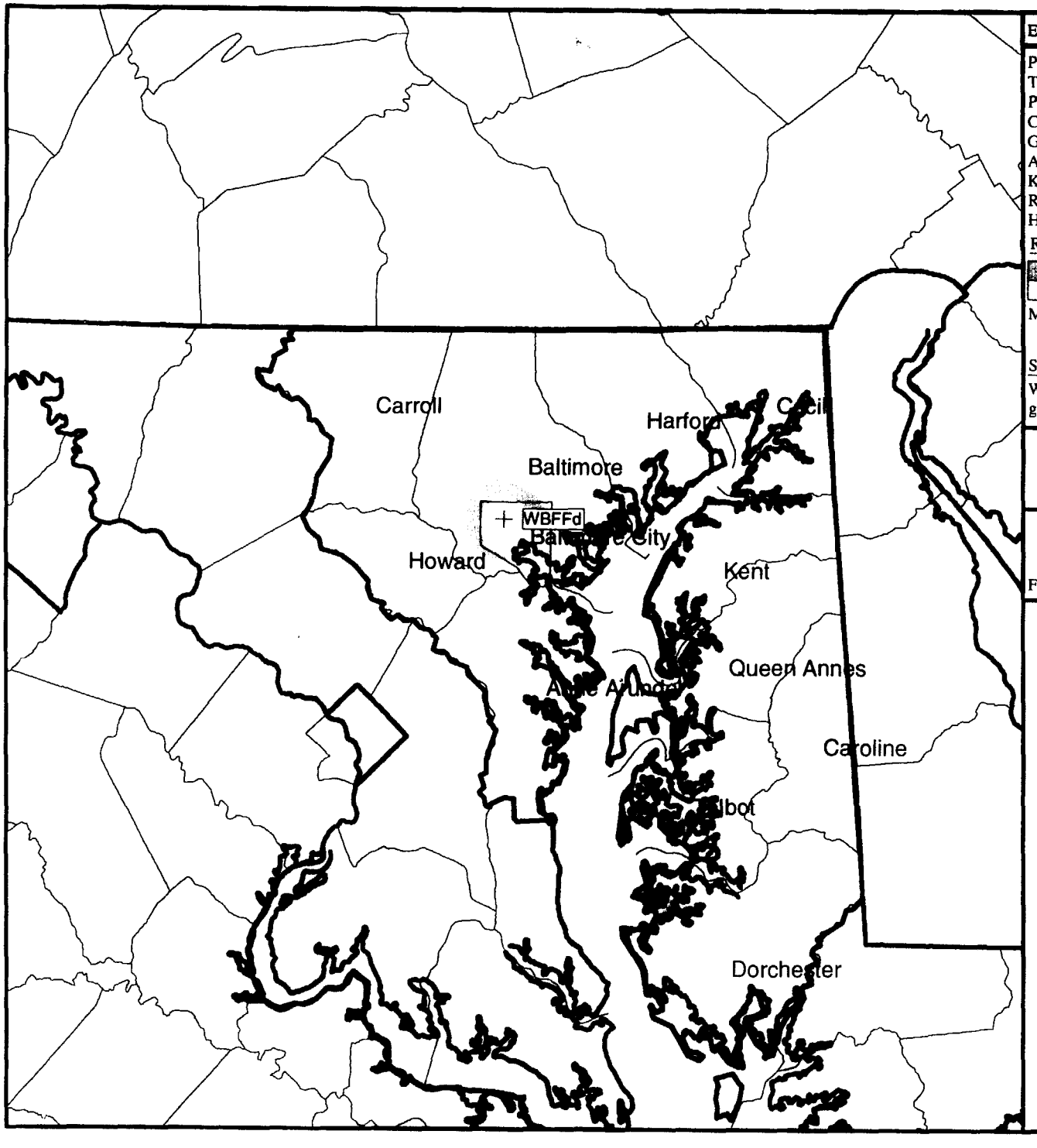
KILOMETERS

-25 0 75

WTXF-DT with Overtilting

Outdoor Reception (FCC)

Figure 2 8/27/98



EDX SignalPro™: WBFFd.map

Prop. model: Free Space + RMD
Time: 99.0% Loc.: 50.0%
Prediction Confidence Margin: 10.0dB
Climate: Continental Temperate
Groundcover: USGS-EDX
Atmospheric Abs.: none
K Factor: 1.540
RX Antenna - Type: OMNI
Height: 3.0 m AGL Gain: 0.00 dBd

Received power at remote

> -40.0 dBmW
< -40.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WBFFd	496.0	60.00	DA-H	N39°20'10.00"
group: 1	665.0000 MHz	0.0		W76°38'59.00"

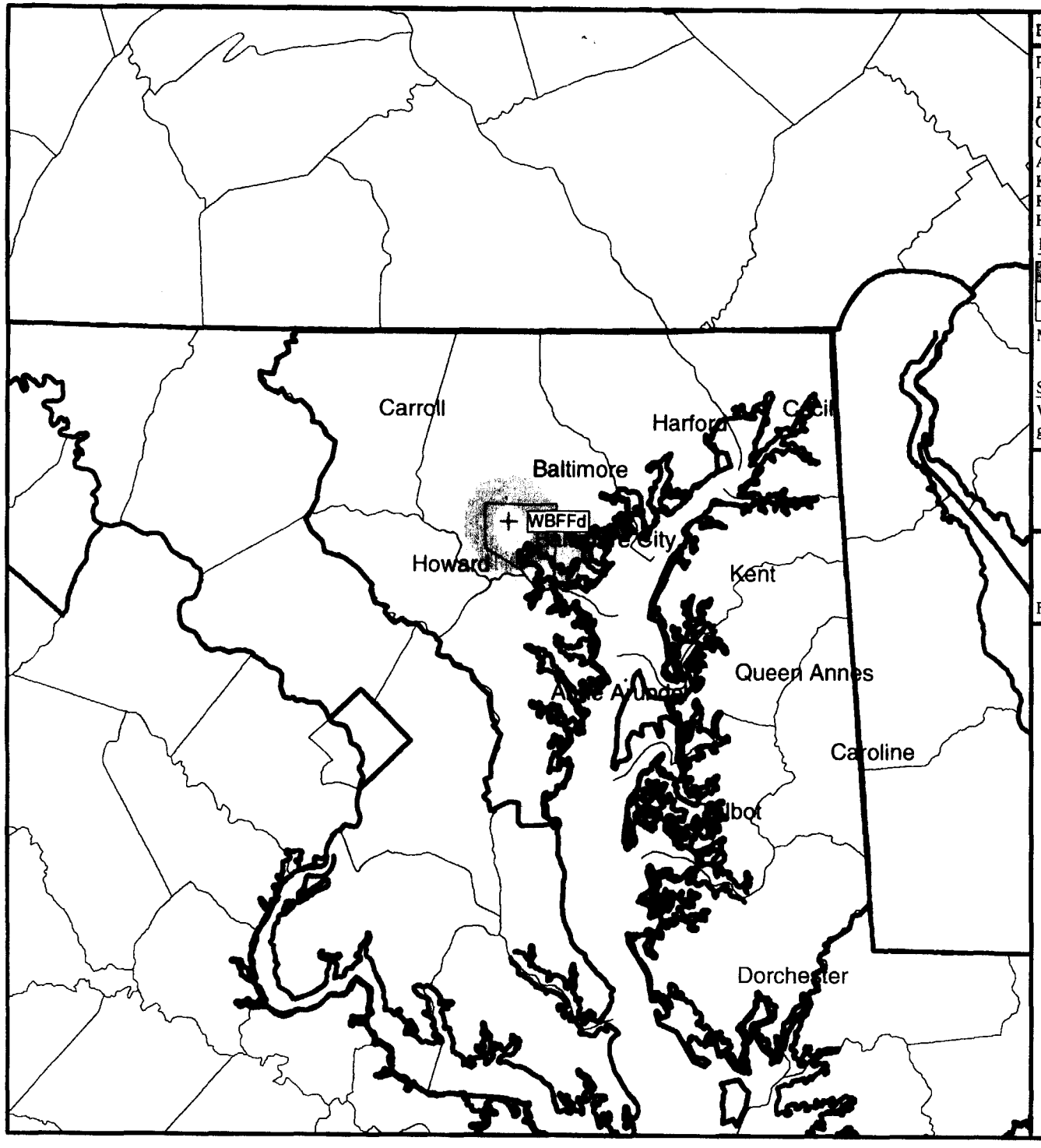
KILOMETERS

-25 0 25

WBFF-DT with Overtilting

Indoor Reception

Figure 3 8/27/98



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KILOMETERS
-25 0 25

WBFF-DT with Overtilting

Outdoor Reception (FCC)

Figure 4 8/27/98

News Technology Group

A News Corporation Company

10201 West Pico Boulevard, 100/2000, Los Angeles, CA 90035
Tel: (310) 369-4482 Fax: (310) 369-8677

TO: DTV Interference File

FROM: Evans Wetmore
Andy Setos

DATE: November 6, 1998

RE: Effects of DTV Over-Tilting on NTSC Taboo Reception

Summary

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Background

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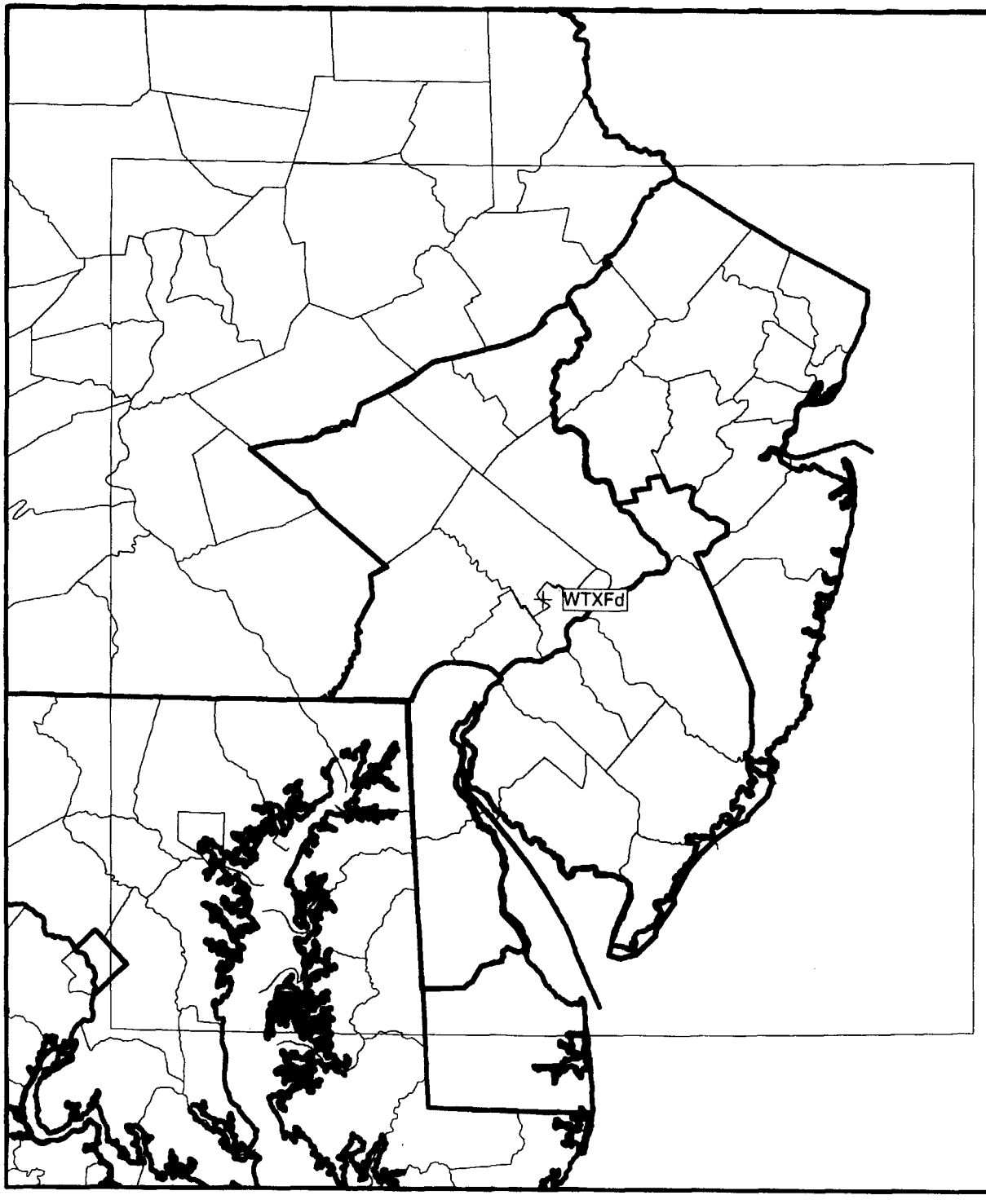


EDX SignalPro™: WTXFd.map

Prop. model: Free Space + RMD
Time: 99.0% Loc.: 50.0%
Prediction Confidence Margin: 10.0dB
Climate: Continental Temperate
Groundcover: USGS-EDX
Atmospheric Abs.: none
K Factor: 1.475
RX Antenna - Type: OMNI
Height: 3.0 m AGL Gain: 0.00 dBd

Received power at remote

> -40.0 dBmW
< -40.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WTXFd	407.0	60.00	DA-H	N40°02'26.00"
group: 1	641.0000 MHz	0.0		W75°14'20.00"

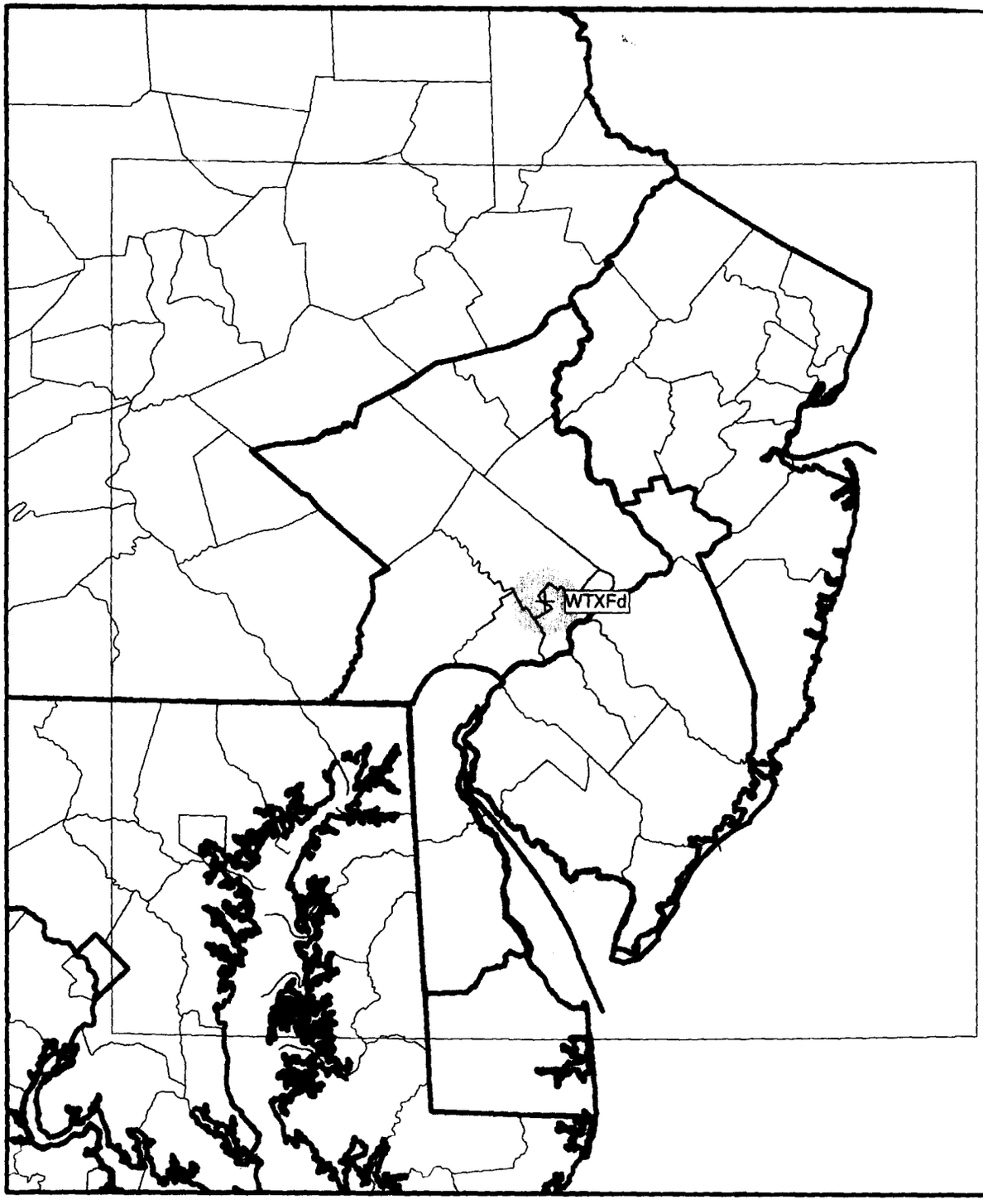
KILOMETERS

-25 0 75

WTXF-DT with Overtilting

Indoor Reception

Figure 1 8/27/98



EDX SignalPro™: WTXFd.map

Prop. model: Longley-Rice v1.2.2
Time: 90.0% Loc.: 50.0%
Prediction Confidence Margin: 0.0dB
Climate: Continental Temperate
Groundcover: None
Atmospheric Abs.: none
K Factor: 1.333
RX Antenna - Type: DA
Height: 9.0 m AGL Gain: 6.00 dBd

Received power at remote

> -10.0 dBmW
-20.0 to -10.0 dBmW
< -20.0 dBmW

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Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
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KILOMETERS

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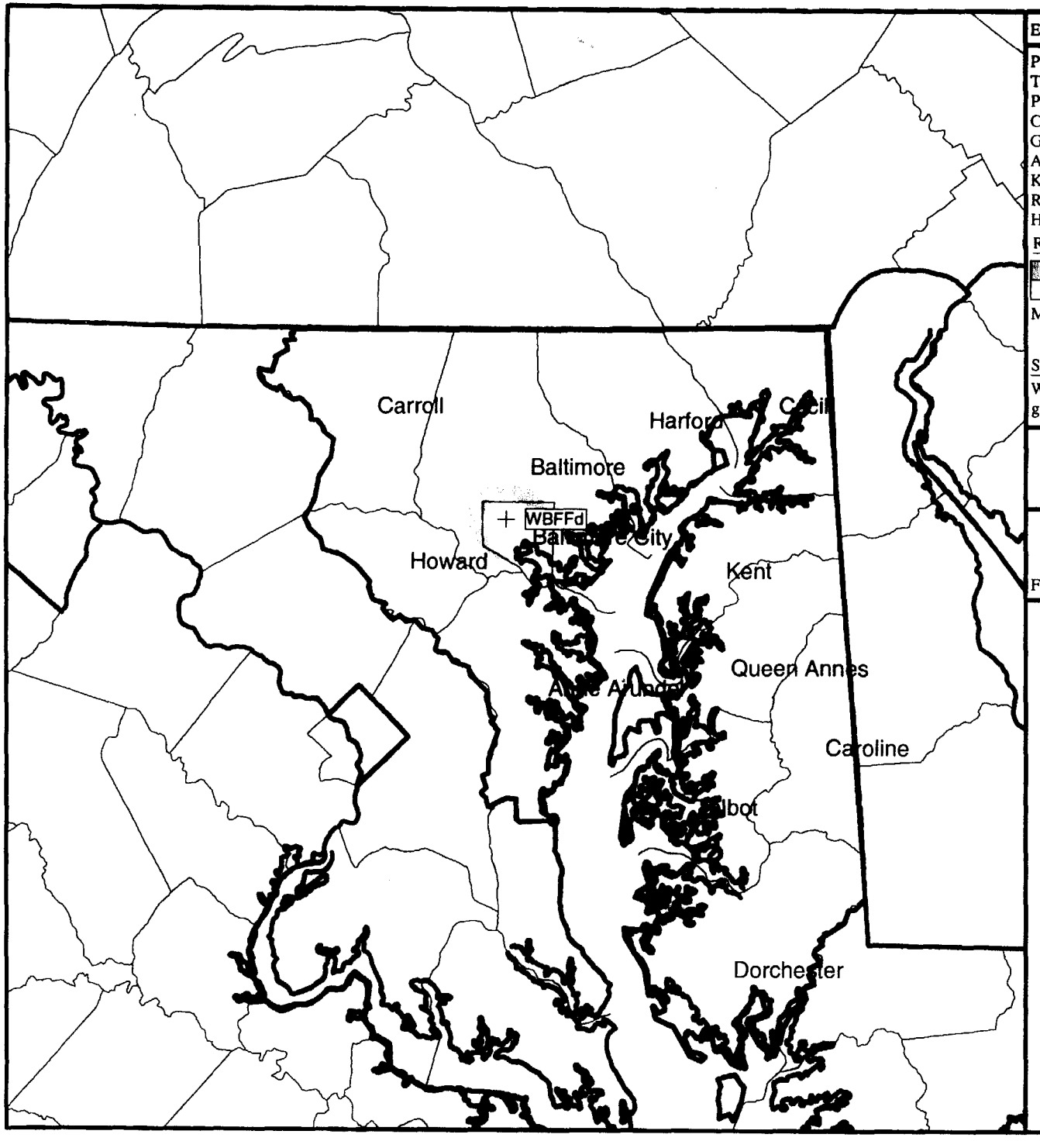
WTXF-DT with Overtilting

Outdoor Reception (FCC)

Figure 2 8/27/98



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Climate: Continental Temperate
Groundcover: USGS-EDX
Atmospheric Abs.: none
K Factor: 1.540
RX Antenna - Type: OMNI
Height: 3.0 m AGL Gain: 0.00 dBd

Received power at remote

> -40.0 dBmW
< -40.0 dBmW

Min. receiver threshold level: -77.0 dBmW

Site	Ant. Elev. AMSL (m)	ERPd (dBW)	Ant. Type/Orient.	Coordinates
WBFFd	496.0	60.00	DA-H	N39°20'10.00"
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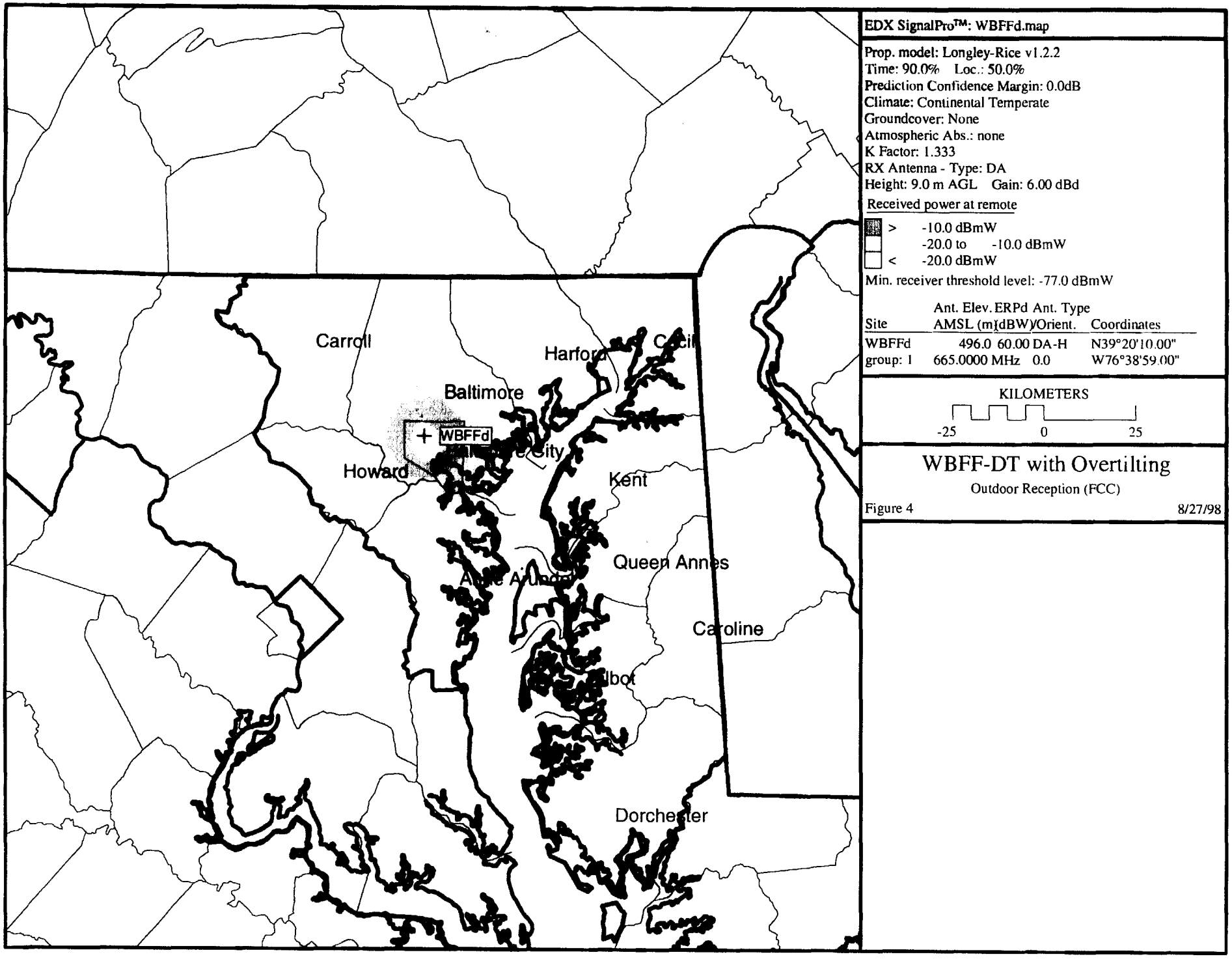
KILOMETERS

-25 0 25

WBFF-DT with Overtilting

Indoor Reception

Figure 3 8/27/98



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WBFF-DT with Overtilting

Outdoor Reception (FCC)

Figure 4 8/27/98

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that the high DTV signal levels occurring near an "over-tilted" DTV transmitter must be calculated to predict any detrimental effect to the analog signal.

On the first matter, our analysis shows that the reception conditions presumed by others simply don't occur in the real world. Therefore, no new laboratory investigations are needed.

The second matter is that the power levels close to an "over-tilted" antenna should be modeled in three dimensions to ensure no interference occurs to an existing analog broadcast signal. Such modeling is necessary to design a DTV "over-tilted" facility which respects existing analog stations.

Background

Persons living in the regions where high DTV levels caused by over-tilting occur are within 10 to 15 km of the DTV transmitter.

Persons living within 15 km of an antenna farm will not be using outdoor reception. They will be using indoor antennas such as loops or rabbit ears. The assumption of outdoor antennas is wholly unjustified as a practical matter for close-in reception.

The assumption of outdoor reception yields signal levels which are excessive and can cause overload and interference problems. In the very unlikely event a consumer were to use an outdoor antenna close to the transmitter site, the installation of a simple pad, which is readily available, would easily and inexpensively dispatch any problems.

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Where over-tilting is proposed, a standard maximization engineering showing should be provided with a full interference analysis which uses the actual elevation patterns of the desired and undesired transmitters.

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We also note that the ATTC/Grand Alliance test data includes taboo data for DTV into NTSC at the "moderate" level so that no new time-consuming testing would be needed. The data is already at hand.

As a general comment we believe that over-tilting should be treated like any other maximization in that a full engineering showing should be required. Also we feel that the use of the "moderate" level and indoor antennas is realistic where close-in analysis must be done.

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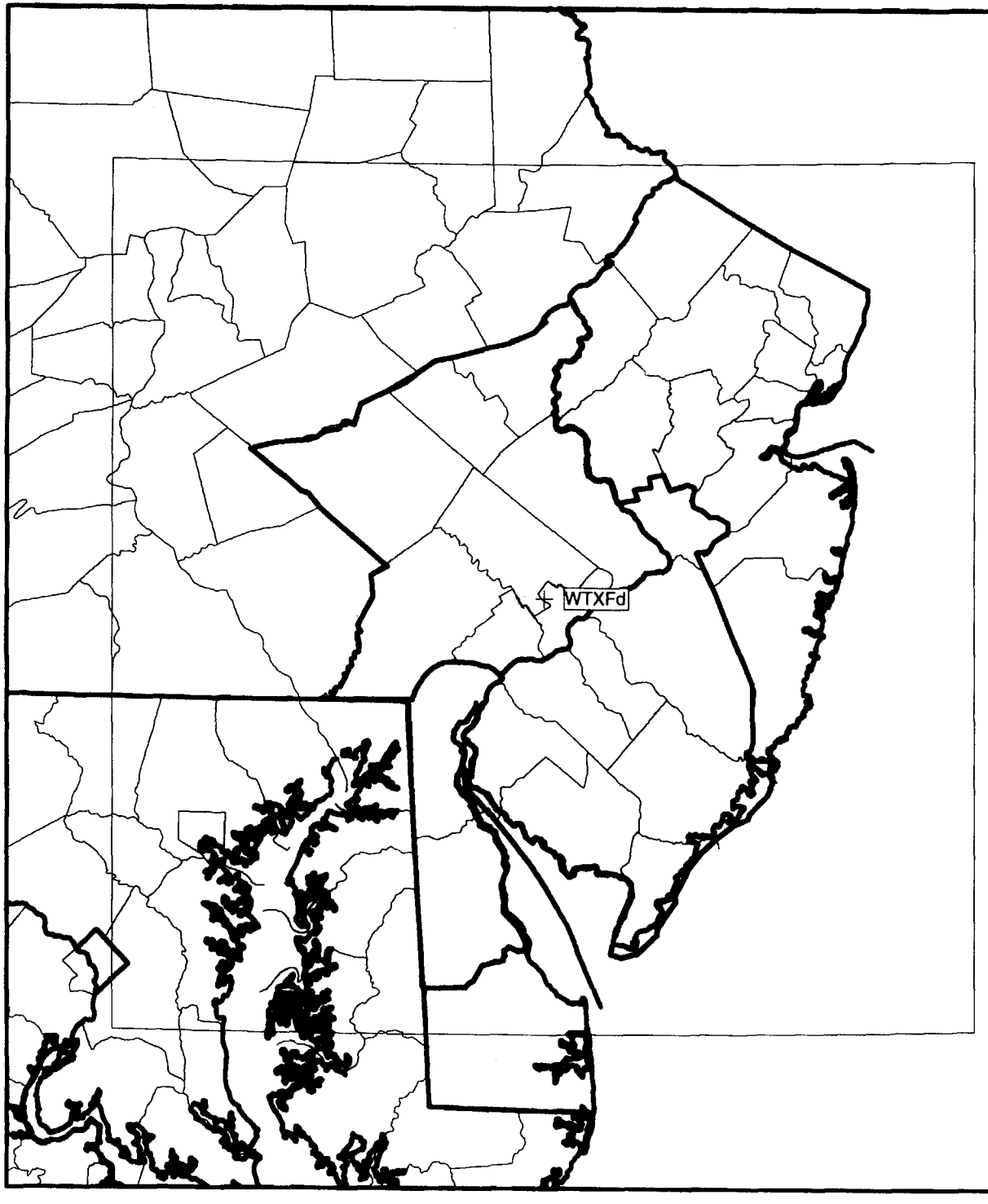

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KILOMETERS

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WTXF-DT with Overtilting

Indoor Reception

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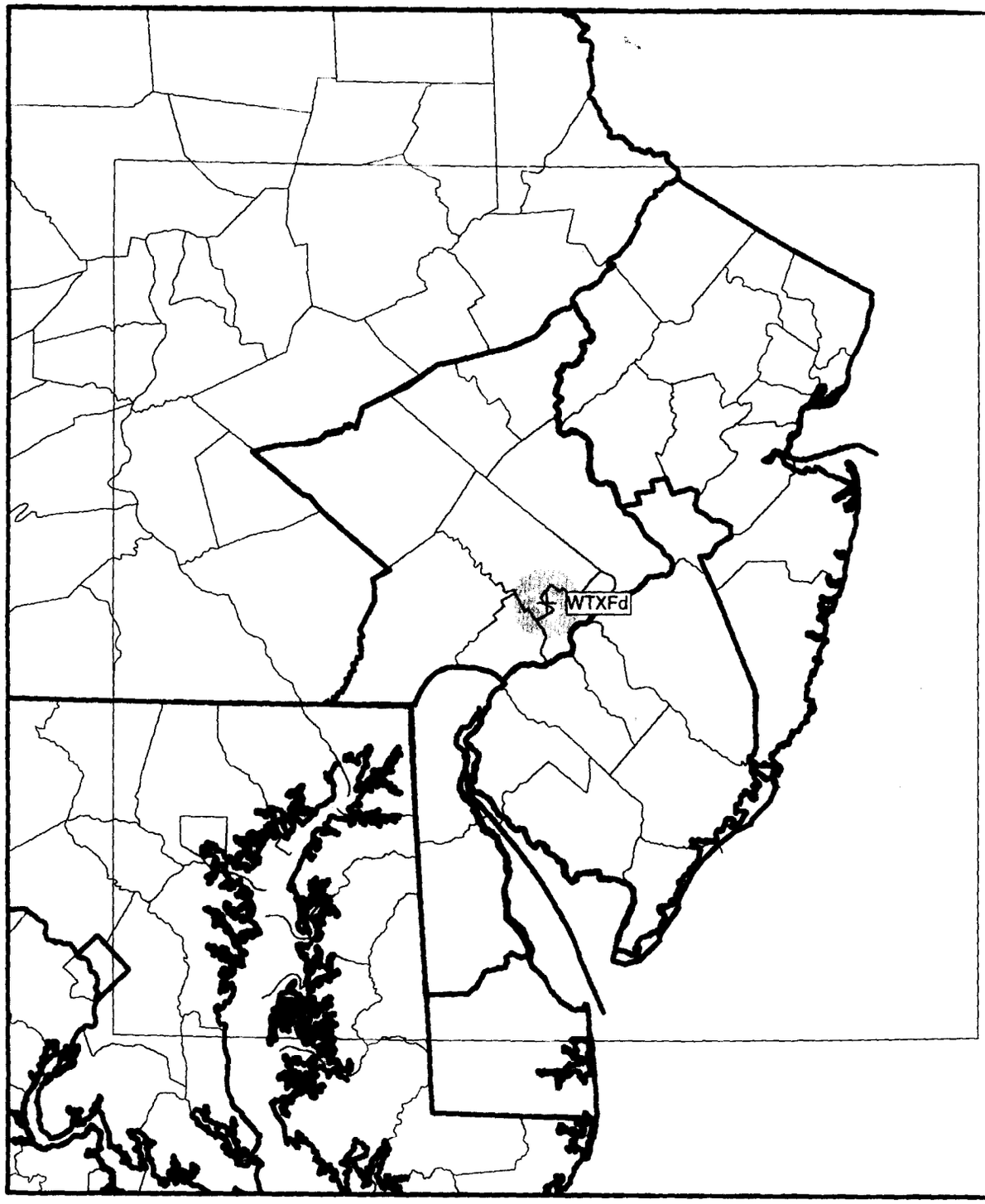

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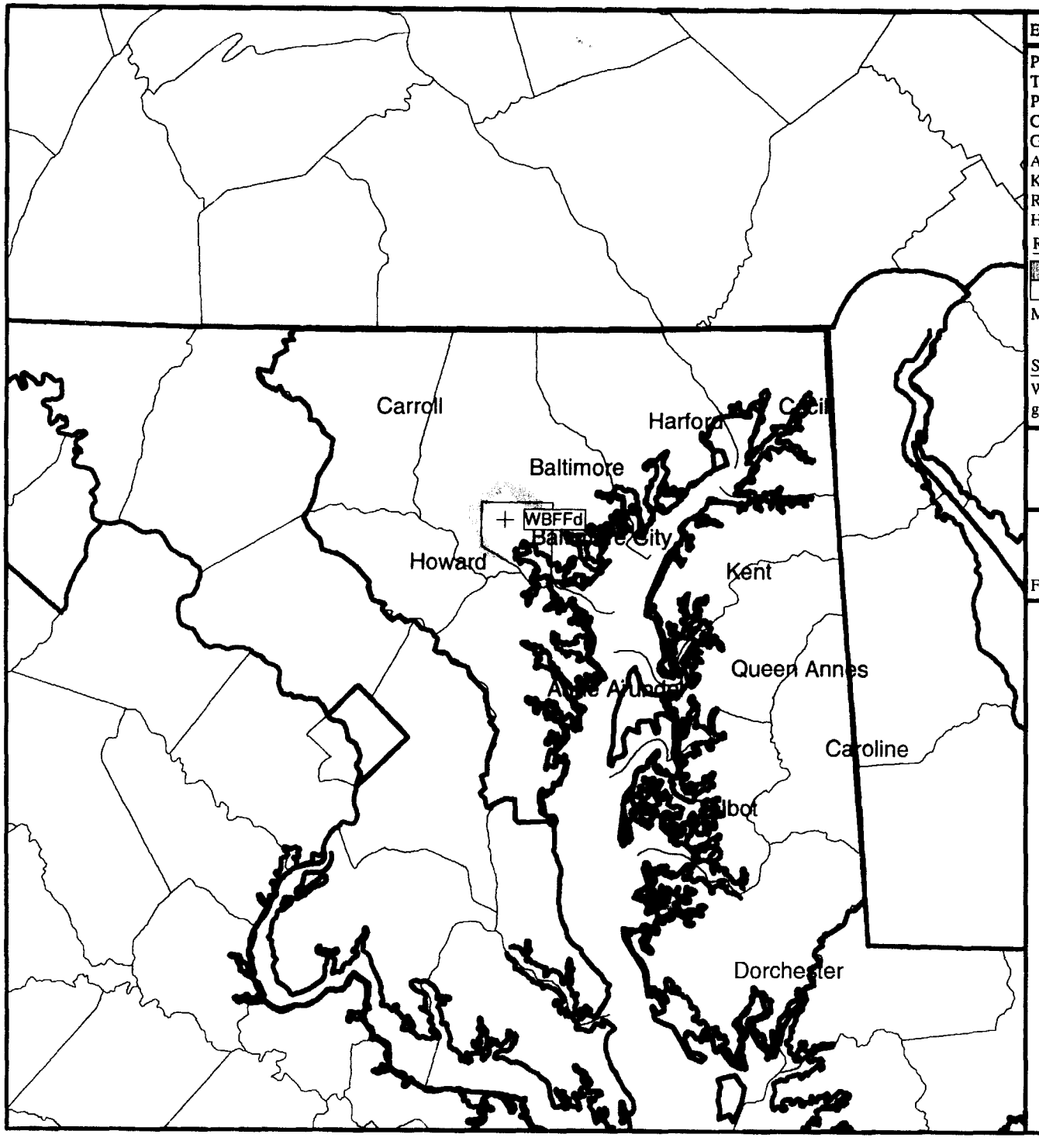

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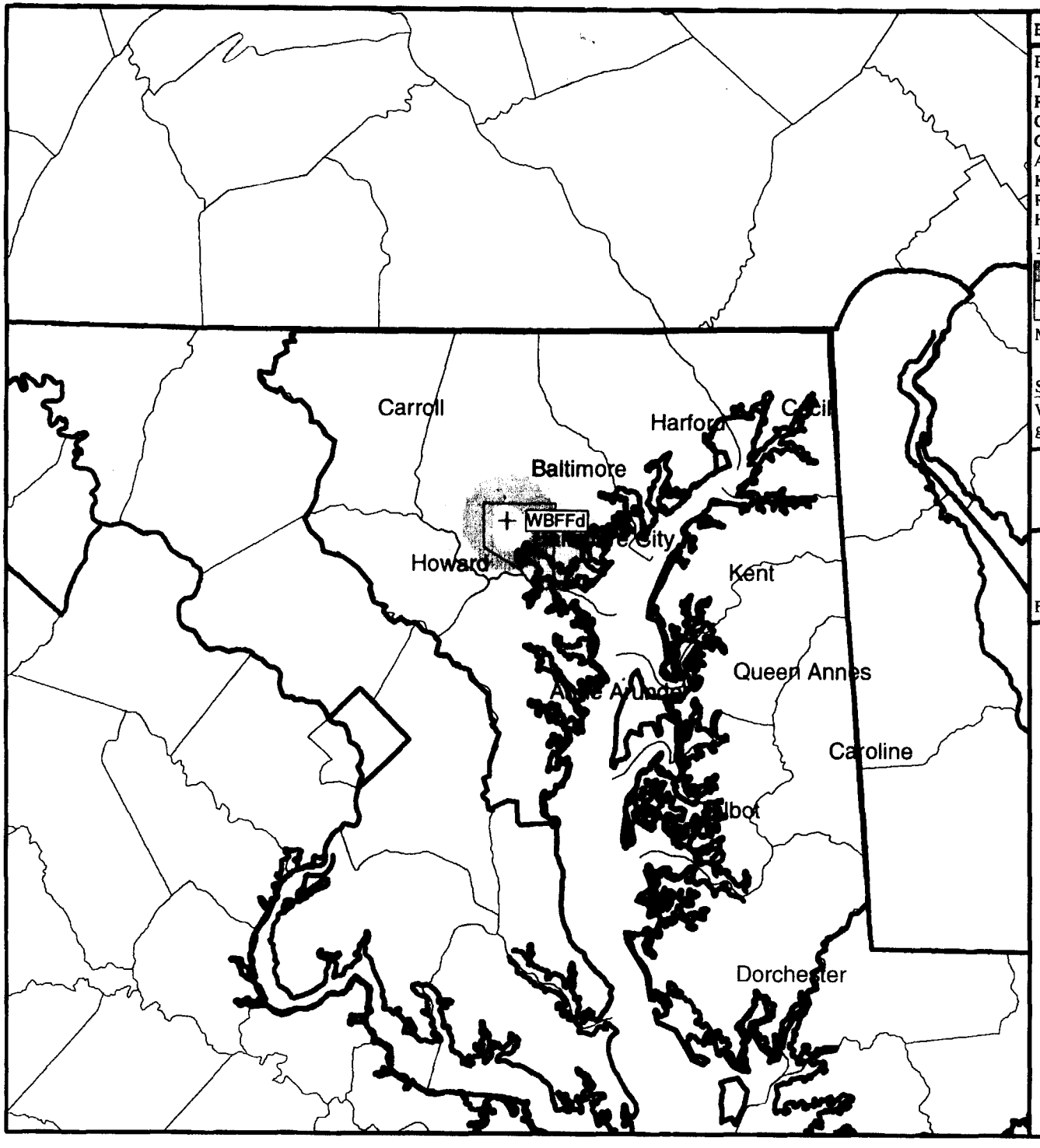

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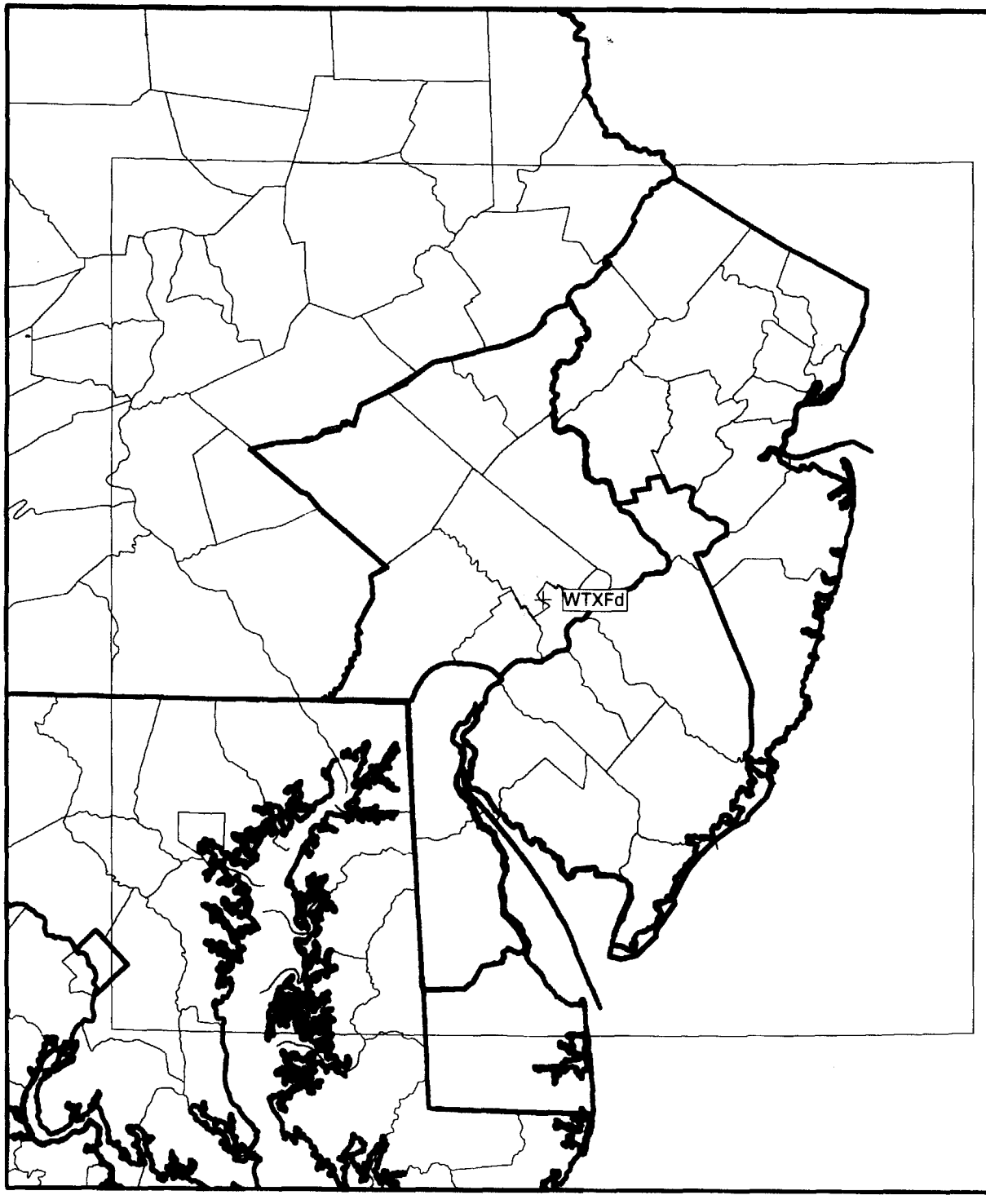

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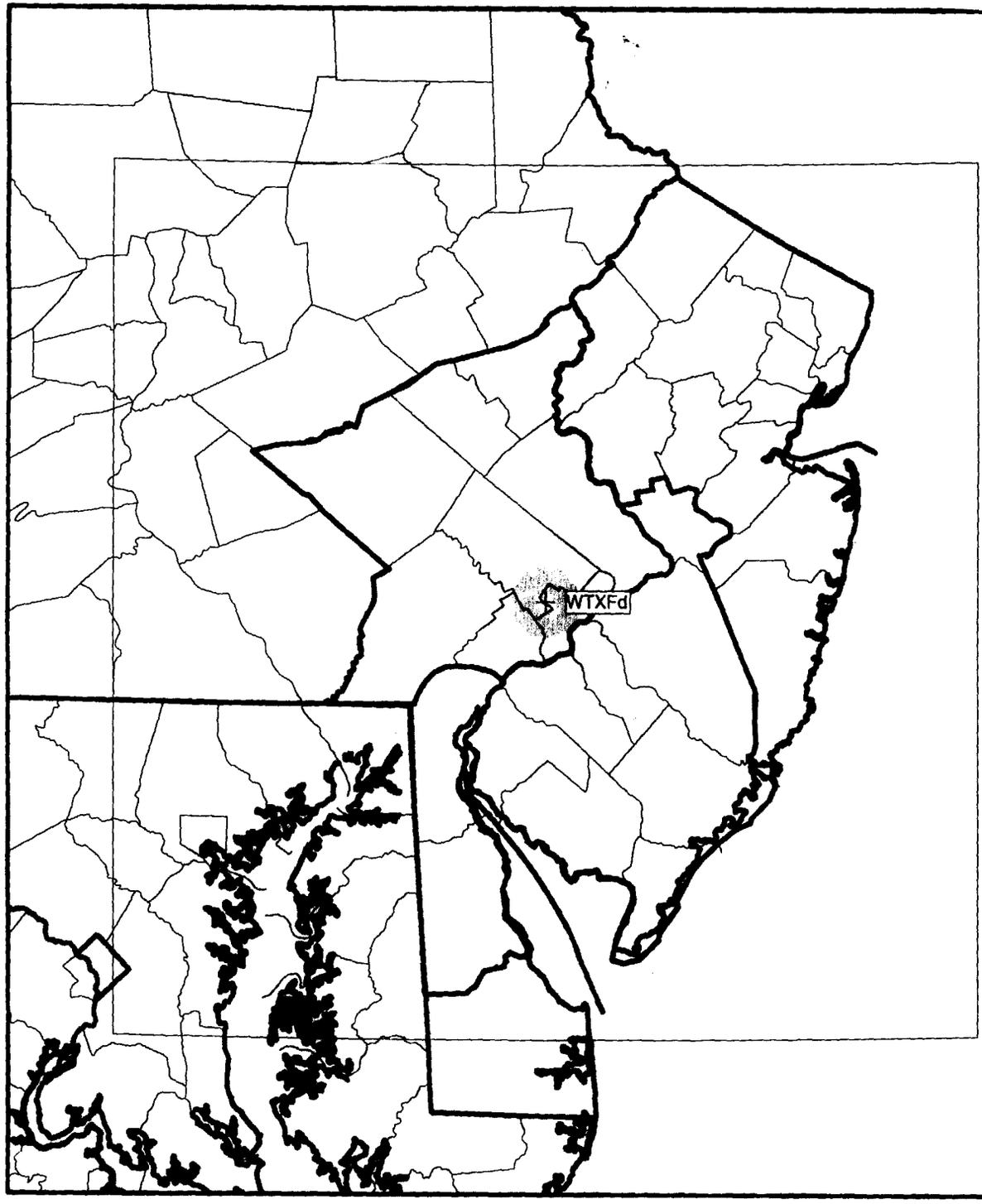

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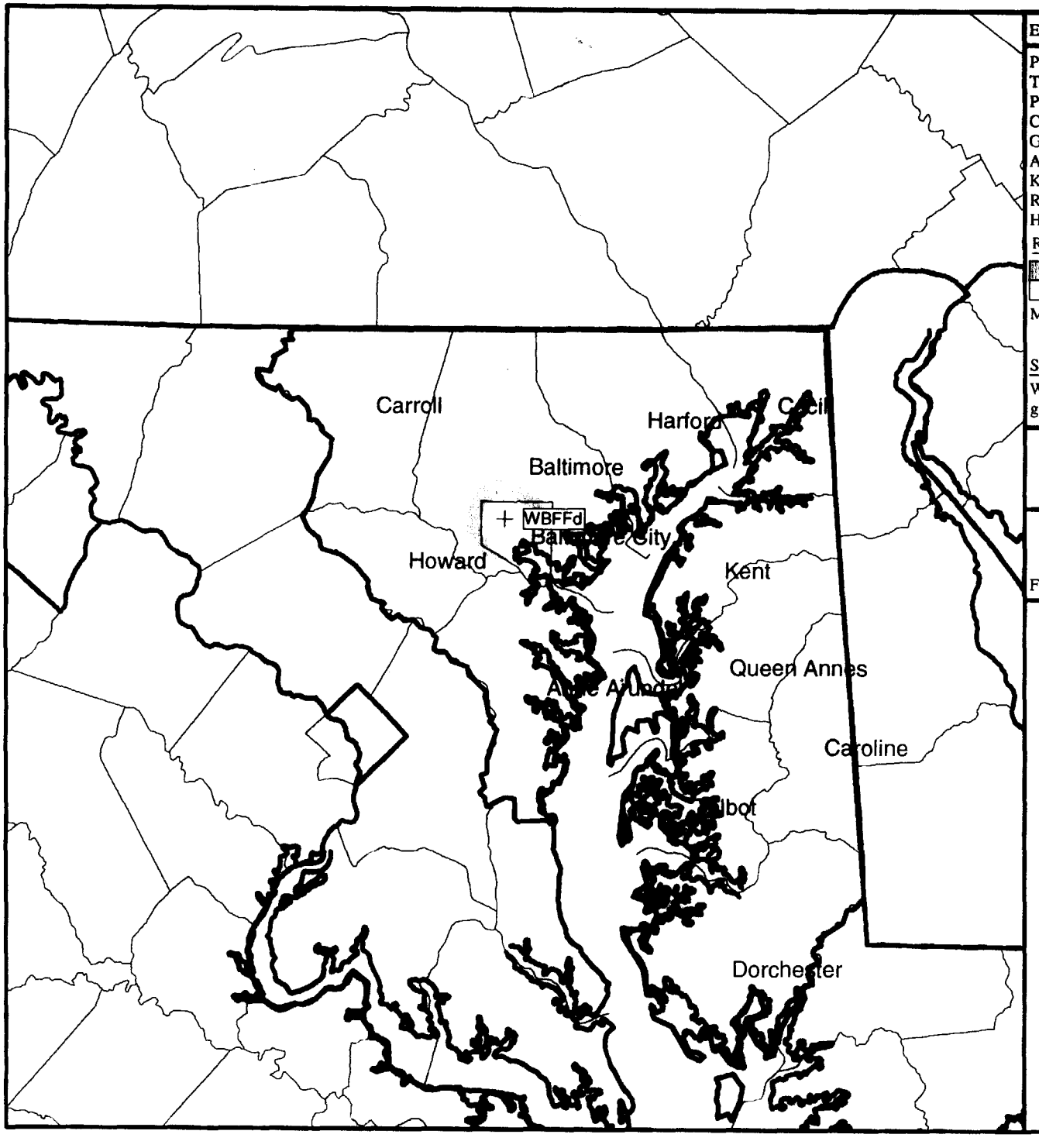

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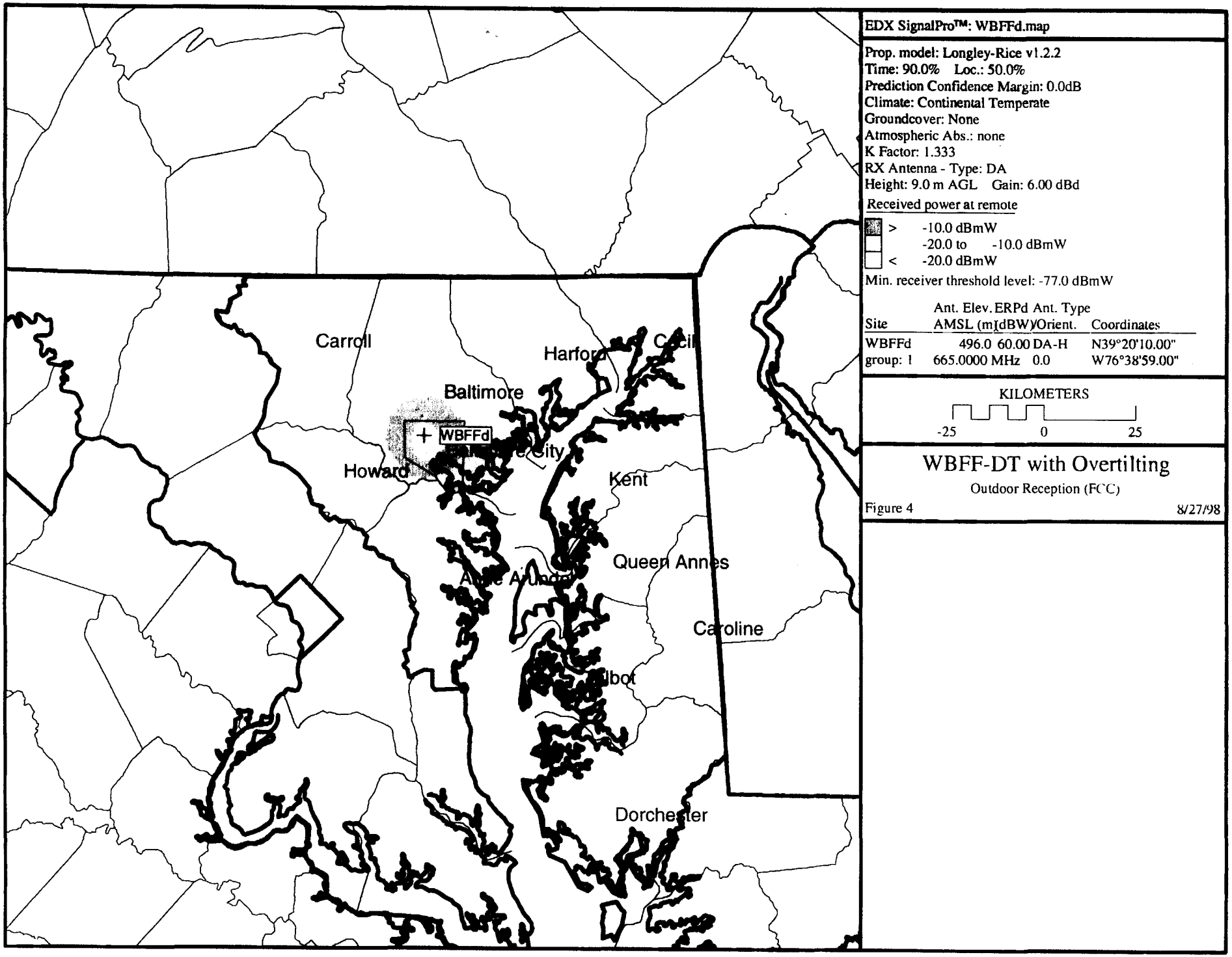

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